UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,552	11/19/2003	Jinlian Hu	007198-556	5057

21839 7590 01/09/2007
BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
SERGENT, RABON A	
ART UNIT	PAPER NUMBER
1711	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/715,552	HU ET AL.	
	Examiner	Art Unit	
	Rabon Sergent	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7-12 and 16-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 7-12, and 16-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 18, 2006 has been entered.

2. Claims 1-3, 7-12, 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants have failed to specify the basis for the claimed weight percent of solvent. It is unclear if the claimed weight percent content is based upon the polyurethane or a reactant or some other entity.

3. Claims 1-3, 7-12, and 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Within the Office action of September 30, 2005, it was stated that it is not seen how physical properties such as tensile modulus can be measured or even assumed to exist for liquid materials (those above the melting point). In response, applicants argued that the melting temperature is defined as the melting temperature of one of the blocks of a di-block shape memory polymer and supplied an article to that effect. However, applicants' specification, as filed, contains no disclosure that "melting temperature", should be so narrowly defined. There is

no disclosure within applicants' specification that even remotely suggests that "melting temperature" refers to one block of a di-block polymer or that applicants' polyurethane constitutes a di-block polymer within the meaning of the cited article. In summation, there is nothing within the specification that would prompt one of ordinary skill to interpret "melting temperature" as argued. Applicants' response of September 18, 2006 has been considered; however, it is not seen that it adequately addresses the position set forth by the examiner.

4. Claims 1-3, 7-12, and 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicants have failed to provide enablement for polymers having melting temperatures over the disclosed range of -30 to 80°C. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). Applicants have argued that the issue was germane only to claims 20 and 22 prior to amendment, and that the current amendment has overcome the rejection. However, it is not seen that this response adequately addresses the issue, since the claims presumably encompass the disclosed polyurethanes having a melting temperature over the argued range. Therefore, the position is maintained that applicants have failed to teach how to produce a polyurethane having a melting point as low as -30°C. The examiner takes the position that polyurethanes having such low melting temperatures are by no means conventional, and it is not apparent from applicants' specification how such a polyurethane can be produced, without having to resort to undue experimentation. The position is further taken that in order to obtain

such an unconventional polyurethane, unique processing and reaction conditions would be required; however, such conditions have not been recited by applicants.

5. Claims 1-3, 7-12, and 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicants have failed to provide enablement for reaction systems wherein the chain extender lacks a carboxylic acid group. It is clear from applicants' disclosure that the purpose of the neutralizer is to convert the carboxylic acid group into an anionic group, and this is the only function that the neutralizer would perform in the context of the invention; however, applicants' claims are not so limited. The neutralizer is not seen to have any material effect on a chain extender that lacks the carboxylic acid group. The basis for the examiner's position concerning the neutralizer is set forth within lines 8-21 of page 6 of the specification, yet applicants' response merely states that this is a preferred embodiment of the invention. Applicants' response fails to clarify how the neutralizer would interact with non-acid group containing chain extenders.

Furthermore, applicants have failed to provide adequate enablement for the production of polyurethanes having the properties set forth within claims 19-22. Applicants' specification provides no clear teachings with respect to the ratio of reactants, the selection of appropriate reactants, or other conditions that must be adhered to in order to obtain polyurethanes having the claimed properties. One could not practice the invention without resorting to undue experimentation. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

Applicants' response in no way clarifies how polyurethanes having the claimed properties would result from following the teachings of the specification, given that applicants' react conventional reactants using conventional processing techniques that would be expected to yield a conventional polyurethane. Furthermore, applicants have failed to identify the "specific details" argued within the response of September 18, 2006 or how these specific details relate to compositions other than those specifically exemplified, yet encompassed by the claims. Lastly, applicants' argued examples have not been received by the examiner and no probative declaration or statement has been provided concerning the compositions of the samples or their properties.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 7-12, and 16-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramanathan et al. ('213).

Patentees disclose the production of polyurethane aqueous dispersions, wherein a prepolymer is produced in the presence of solvent from diisocyanates, polyols and chain extenders that correspond to applicants' claimed components. After formation of the prepolymer, the acid groups resulting from incorporation of the chain extender are neutralized with an amine, such as triethylamine. The neutralized prepolymer is then dispersed in water and the solvent is removed. This disclosure satisfies applicants' steps d) through f). Furthermore, applicants' claimed ratios and reaction conditions are disclosed within the reference. See column

2, lines 45+ and columns 3-5. Patentees teach at column 5, lines 14-16 that the diisocyanate, polyol, and chain extender may be reacted sequentially to form block copolymers; therefore, patentees are considered to adequately disclose applicants' steps a) through c). Furthermore, since the disclosed polyurethanes are produced from reactants that meet those claimed, applicants' claimed physical properties are considered to be inherently possessed by the disclosed polyurethanes.

8. Despite applicants' remarks, applicants have provided no probative evidence to demonstrate a patentable distinction between the products of the prior art and the instant product. Furthermore, applicants have misconstrued the teaching concerning sequential reaction of the reactants within Ramanathan et al.; applicants' argument concerning block copolymerization is not fully understood; however it is assumed that applicants are arguing that reaction occurs between the polyester polyol and the ionic group containing compound. This is simply not the case, since the polyester polyol and ionic containing compound are not reactive with each other. The skilled artisan would immediately understand that the teaching pertains to reacting the polyisocyanate with the isocyanate reactive compounds sequentially to obtain urethane block copolymers, and it is not seen that this process is distinct from applicants' process or that it yields a product distinct from applicants' product.

9. Claims 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Klauck et al. ('433).

Patentees disclose the production of polyurethane aqueous dispersions, wherein a solventless prepolymer is produced from diisocyanates, polyols and chain extenders that correspond to applicants' claimed components. After formation of the prepolymer, the acid

groups resulting from incorporation of the chain extender are neutralized with an amine. The neutralized prepolymer is then dispersed in water. See abstract and columns 3-10. Furthermore, since the disclosed polyurethanes are produced from reactants that meet those of applicants, applicants' claimed physical properties are considered to be inherently possessed by the disclosed polyurethanes.

10. Applicants have provided no probative evidence to demonstrate a patentable distinction between the products of the prior art and the instant product. Furthermore, applicants' remarks are not commensurate in scope with the claims, in that the rejected claims do not exclude the argued isocyanate species.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (571) 272-1079.

R. Sergent
December 29, 2006

RABON SERGENT
PRIMARY EXAMINER